

ABSTRACT

A method for forming a capacitor and a contact hole of a semiconductor device substantially simultaneously is disclosed. According to one example, a metal layer and a TiN layer are deposited in sequence on a substrate and, then, etched through a pattern to form a capacitor part and a contact hole part on the substrate. A insulating layer and an ILD layer are formed in sequence over the substrate including the capacitor part and the contact hole part. Through etching processes using photoresist patterns as masks, openings are formed in the capacitor part and the contact hole part. The openings are filled with tungsten to form tungsten plugs. As disclosed herein, device defects may be reduced using a damascene process to fabricate a semiconductor device with simple structure by using a tungsten plug as an upper metal layer of a capacitor.